CLAIMS

1.   An apparatus for multi-cast transmissions that minimize channel

2   resources, comprising:

a memory element; and

4   a processing element for executing a set of instructions stored in

the memory element, the set of instructions for:

6   generating an identifier for a group of subscribers, wherein the

identifier is for accessing a multi-cast service;

8   using channel quality information for at least one subscriber to

determine the timing of the multi-cast service to the group of subscribers;

10   and

transmitting the identifier and the multi-cast service on at least one

12 channel, wherein the multi-cast service is transmitted in accordance with

the timing determined by the channel quality information.

2.   The apparatus of Claim 1, wherein transmitting the identifier and

2   the multi-cast service on at least one channel comprises:

transmitting the identifier on a first channel; and

4   transmitting the multi-cast on a second channel.

3.   The apparatus of Claim 2, wherein the processing element is

2   further for executing instructions for:

scrambling the multi-cast service before transmitting the multi-cast

4   service on the second channel, wherein the scrambling is performed by

using a code known only to the group of subscribers.

4.   The apparatus of Claim 1, wherein using channel quality

2   information for at least one subscriber to determine the timing of the multi-cast

service comprises:

4   choosing channel quality information by selecting the channel
quality information associated with the subscribers with the worst channel
6   conditions; and
           determining the timing of the multi-cast service in accordance with
8   the subscribers with the worst channel conditions.

           5.   The apparatus of Claim 4, wherein the channel quality information
2   is a measurement of the channel interference of the forward link common pilot
signal.

           6.   The apparatus of Claim 4, wherein the channel quality information
2   is derived from the transmission power levels of a base station.

           7.   The apparatus of Claim 4, wherein the channel quality information
2   is a plurality of acknowledgment signals.

           8.   The apparatus of Claim 7, wherein choosing the channel quality
2   information of the subscribers with the worst channel conditions comprises:
           transmitting a plurality of test data packets to the group of
4   subscribers;
           waiting for a plurality of acknowledgment signals from the group of
6   subscribers in response to the plurality of test data packets; and
           transmitting the multi-cast service if the plurality of
8   acknowledgment signals indicates a response from a predetermined percentage
of the group of subscribers.

           9.   The apparatus of Claim 1, wherein using channel quality
2   information for at least one subscriber to determine the timing of the multi-cast
service comprises:
4   choosing the channel quality information of the subscriber with the worst
channel conditions;
6   determining the timing of the multi-cast service in accordance with the
subscriber with the worst channel condition.

10.   The apparatus of Claim 9, wherein the channel quality information

2   is an acknowledgment signal from the subscriber with the worst channel

condition.

11.   An apparatus for multi-cast transmissions that minimize channel

2   resources, comprising:

a memory element; and

4   a processing element for executing a set of instructions stored in

the memory element, the set of instructions for:

6   generating an identifier for a group of subscribers, wherein the

identifier is for accessing a multi-cast service;

8   using channel quality information for at least one subscriber to

determine the transmission format of the multi-cast service to the group

10   of subscribers; and

transmitting the identifier and the multi-cast service on at least one

12   channel, wherein the multi-cast service is transmitted in accordance with

the transmission format determined by the channel quality information.

12.   The apparatus of Claim 11, wherein transmitting the identifier and

2   the multi-cast service on at least one channel comprises:

transmitting the identifier on a first channel; and

4   transmitting the multi-cast on a second channel.

13.   The apparatus of Claim 12, wherein the processing element is

2   further for executing instructions for:

scrambling the multi-cast service before transmitting the multi-cast

4   service on the second channel, wherein the scrambling is performed by

using a code known only to the group of subscribers.

14.   The apparatus of Claim 11, wherein using channel quality

2   information for at least one subscriber to determine the transmission format of

the multi-cast service comprises:

4   choosing channel quality information by selecting the channel
quality information associated with the subscribers with the worst channel
6   conditions; and
determining the transmission format of the multi-cast service in
8   accordance with the subscribers with the worst channel conditions.

15.   The apparatus of Claim 14, wherein the channel quality
2   information is a measurement of the channel interference of the forward link
common pilot signal.

16.   The apparatus of Claim 14, wherein the channel quality
2   information is derived from the transmission power levels of a base station.

17.   The apparatus of Claim 14, wherein the channel quality
2   information is a plurality of acknowledgment signals.

18.   The apparatus of Claim 17, wherein choosing the channel quality
2   information of the subscribers with the worst channel conditions comprises:
transmitting a plurality of test data packets to the group of
4   subscribers;
waiting for a plurality of acknowledgment signals from the group of
6   subscribers in response to the plurality of test data packets; and
transmitting the multi-cast service if the plurality of
8   acknowledgment signals indicates a response from a predetermined percentage
of the group of subscribers.

19.   The apparatus of Claim 11, wherein using channel quality
2   information for at least one subscriber to determine the transmission format of
the multi-cast service comprises:
4   choosing the channel quality information of the subscriber with the worst
channel conditions;
6   determining the transmission format of the multi-cast service in
accordance with the subscriber with the worst channel condition.

20. The apparatus of Claim 19, wherein the channel quality

2   information is an acknowledgment signal from the subscriber with the worst

channel condition.

21. An apparatus for multi-cast transmissions that minimize channel

2   resources, comprising:

a memory element; and

4   a processing element for executing a set of instructions stored in

the memory element, the set of instructions for:

6   determining the channel quality information for a plurality of

subscribers;

8   identifying the subscriber with the worst channel conditions;

scrambling a multi-cast service using a scrambling code known to

10 the plurality of subscribers; and

transmitting the scrambled multi-cast service to the plurality of

12 subscribers, wherein the scrambled multi-cast service is transmitted in

accordance with a transmission format that is optimal for the subscriber

14 with the worst channel conditions.

22. A method for broadcasting to a group of subscribers in a cellular

2   communication network, comprising:

determining the channel quality information for a plurality of subscribers;

4   identifying the subscriber with the worst channel conditions;

scrambling a multi-cast service using a scrambling code known to the

6   plurality of subscribers; and

transmitting the scrambled multi-cast service to the plurality of

8   subscribers, wherein the scrambled multi-cast service is transmitted in

accordance with a transmission format that is optimal for the subscriber with the

10 worst channel conditions.

23. A method for broadcasting to a group of subscribers in a cellular

2   communication network, comprising:

generating an identifier for a group of subscribers, wherein the identifier

4   is for accessing a multi-cast service;

using channel quality information for at least one subscriber to determine

6   the timing of the multi-cast service to the group of subscribers; and

transmitting the identifier and the multi-cast service on at least one

8   channel, wherein the multi-cast service is transmitted in accordance with the

timing determined by the channel quality information.

24.   A method for broadcasting to a group of subscribers in a cellular

2   communication network, comprising:

generating an identifier for a group of subscribers, wherein the identifier

4   is for accessing a multi-cast service;

using channel quality information for at least one subscriber to determine

6   the transmission format of the multi-cast service to the group of subscribers;

and

8   transmitting the identifier and the multi-cast service on at least one

channel, wherein the multi-cast service is transmitted in accordance with the

10   transmission format determined by the channel quality information.

25.   A method for efficient multi-cast broadcasting, comprising:

2   generating an identifier for a group of subscribers, wherein the identifier

is for accessing a multi-cast service;

4   identifying the subscriber with the worst channel quality by analyzing a

plurality of channel quality feedback indicators from a group of subscribers;

6   selecting a timing and a transmission format of the multi-cast service so

that the multi-cast service will be received by the subscriber with the worst

8   channel conditions; and

transmitting the identifier on a first channel and the multi-cast service on

10   a second channel in accordance with the timing and the transmission format as

determined by the subscriber with the worst channel quality.